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Rectal foreign bodies: A case report and review of the literature

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ABSTRACT

INTRODUCTION: Rectal foreign bodies (RFB) present the modern surgeon with a difficult management dilemma, as the type of object, host anatomy, time from insertion, associated injuries and amount of local contamination may vary widely. Reluctance to seek medical help and to provide details about the incident often makes diagnosis difficult. Management of these patients may be challenging, as presentation is usually delayed after multiple attempts at removal by the patients themselves have proven unsuccessful.
PRESENTATION OF CASE: In this article we report the case of a male who presented with a large ovoid rectal object wedged into his pelvis. As we were unable to extract the object with routine transanal and laparotomy approach, we performed a pubic symphysiotomy that helped widen the pelvic inlet and allow transanal extraction.
DISCUSSION: We review currently available literature on RFB and propose an evaluation and management algorithm of patients that present with RFB.
CONCLUSION: Management of patients with rectal foreign bodies can be challenging and a systematic approach should be employed. The majority of cases can be successfully managed conservatively, but occasional surgical intervention is warranted. If large objects, tightly wedged in the pelvis cannot be removed with laparotomy, pubic symphysiotomy should be considered.

1. Introduction

Foreign body insertion in the rectum has been extensively described in the surgical literature, with the earliest reports dating back to the 16th century. Whether done for purposes of sexual gratification or not, voluntarily or accidentally, the reported incidence of rectal foreign bodies (RFB) is rather rare with only isolated published case reports or case series. It is important for emergency room physicians and general surgeons to be systematic in their approach and be familiar with a variety of extraction techniques and management of colorectal injuries resulting from the insertion or extraction of the foreign body.

A problem commonly encountered in patients with RFB is the delay in presentation.[1,2] While patients may be reluctant to disclose the cause of their presentation, diagnosis can be made in the majority of cases with accurate history and confirmed with plain radiographs. It is important to rule out signs and symptoms of peritonitis. An attempt at manual retrieval of the foreign body is always warranted as a first step, with or without light sedation. If this is unsuccessful, or there is evidence of significant bowel injury or even perforation, surgical intervention is warranted. In this report we describe a case of a Caucasian male who presented with a large oval foreign body in the rectum and in whom traditionally employed conservative and surgical methods of extraction failed. He eventually required pubic symphysiotomy to increase the diameter of his pelvic brim. We also review currently available and typically utilized methods of RFB extraction and management of potentially associated rectal injuries, and propose a management algorithm for the systematic approach of patients that present with RFB.

2. Case presentation

A 41-year-old HIV+ Caucasian male presented to the emergency department (ER) complaining of severe pelvic pain from a large oval-shaped marble he had inserted in his rectum approximately 2 h prior to presentation. The patient reported that multiple attempts to remove it at home failed, even with use of marijuana (in an effort to relax the anal sphincter) prior to his arrival at the ER.

On examination, his abdomen was soft, non-distended and non-tender to palpation, without sings of peritonitis. Bowel sounds were decreased. An X-ray of the lower abdomen revealed a large, ovoid-shaped object in the rectum (Fig. 1). The foreign body was palpable in the rectum, but due to its shape, large size and its smooth surface it was impossible to retrieve with simple maneuvering, including simultaneous application of suprapubic pressure. Proctoscopy was not attempted, as the anal canal was well dilated and the foreign object and distal rectal mucosa were easily seen and examined

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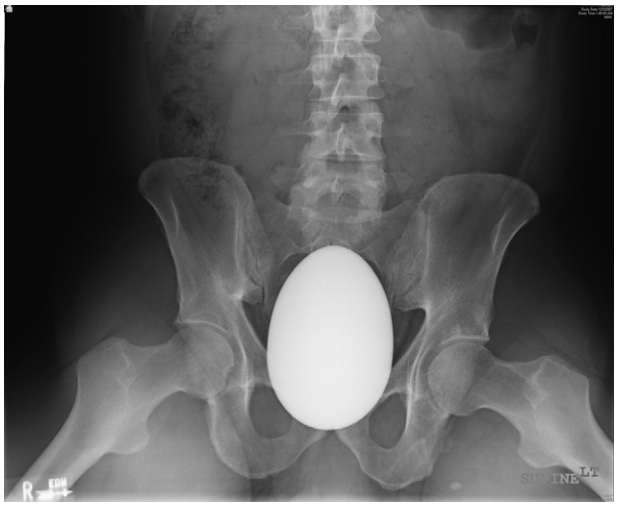

Fig. 1. Pelvic X-ray of the foreign body in situ.

Fig. 2. The extracted rectal foreign body.

with a rectal speculum. Mild mucosal hyperemia was noted, but there was no evidence of tears or ischemic compromise to the rectal mucosa. As the patient was very uncomfortable with our maneuvers, despite maximal intravenous analgesia, we elected to proceed with an examination under anesthesia and possibly surgical exploration.

After fluid resuscitation and preoperative intravenous antibiotics, the patient was brought to the operating room, where he was anesthetized and intubated, and placed in the lithotomy position. An attempt to remove the foreign body manually with lubrication and more aggressive manipulation was fruitless, as the foreign body's greatest diameter appeared to be wider than the patient's pelvic outlet. We attempted use of delivery forceps but were unsuccessful. A decision was made to proceed with laparotomy. We felt at attempt at laparoscopy would have been inadequate for extraction, given the size of the foreign item. An 8 cm midline incision was made infraumbilically and was deepened through the midline subcutaneous tissue and fascia with electrocautery, until the peritoneal cavity was entered. The distal sigmoid and rectum were identified and the foreign body was palpated below the pelvic brim, tightly wedged in the pelvis. It seemed that the marble was pushed into the rectum with force that transiently relaxed the pelvic ligaments and allowed its slightly wider diameter to pass through and wedge within the lesser pelvis. Unfortunately, due to the android shape of our patient's pelvis, we were unable to perform the same maneuver with downward force from the abdomen. As the proximal rectal wall was sliding over the apex of the foreign body, not allowing significant force to be applied uniformly onto it, and in order to prevent mucosal injury by compressing it against the foreign body with excessive pressure, an enterotomy was made through which the foreign object was again pushed downward toward the anus, again without results. An attempt at pushing the egg upward, from the rectum into the peritoneal cavity was similarly unsuccessful.

At this point we felt that it was the patient's pelvic anatomy that prevented us from retrieving the tightly wedged object and we consulted orthopedic surgery. A separate Pfannenstiel incision was made just over the superior edge of the pubis at the insertion of the rectus muscle. The incision was carried down through the subcutaneous tissue all the way down to the superior border of the symphysis. The dissection extended along the superior pubic rami in both directions laterally, the anterior and undersurface of the symphysis pubis anteriorly and posteriorly respectively, while care was taken to prevent bladder injury, transposing a protective wide malleable retractor between the urinary bladder and the pubic symphysis. The latter was divided longitudinally with an osteotome and stretched open to approximately 4 cm in width with a laminar spreader. Obstetric forceps were again used transanally to grasp the foreign body and pull it out, with the simultaneous application of downward manual pressure from the peritoneal cavity. The specimen, an egg-shaped, marble ornament measuring 12 cm × 8 cm × 8 cm, was sent to pathology for examination (Fig. 2).

Sigmoidoscopy was next undertaken and revealed minor mucosal bleeding over the areas that were compressed by the foreign body against the non-compliant bony pelvis. The enterotomy was closed with interrupted absorbable suture in two layers and checked with insufflation. After removal of the laminar spreader, a 1.5 cm gap remained at the symphysiotomy. No internal fixation implants were used due to contamination of our field from the enterotomy.

By this time, blood-tinged urine was noted in the Foley catheter, and bladder injury ruled out with intravesical irrigation followed with no evidence of extravasation, as the bladder was visualized through the opening in the symphysis pubis. The balloon of the urinary catheter was easily palpated and so was the prostate. Cystoscopy was deemed unnecessary due to absence of any obvious bladder injury on irrigation. No bleeding was noted from the venous plexus in the area and the Foley catheter was put to dependent drainage. Incisions were closed in layers.

The patient had an unremarkable recovery and was discharged on post-operative day 4 with some discomfort with ambulation.

3. Discussion

Rectal foreign bodies, even though rather infrequent, are no longer considered clinical oddities in urgent care facilities and emergency departments, and it appears that their incidence is increasing, specifically in urban populations.[1,3] Although the medical literature is replete with numerous case reports and case series of RFB in patients of all ages, genders and ethnicities,[1–21] the majority are male in their 3rd and 4th decades.[1–3] Foreign bodies can be inserted in the rectum for sexual gratification or non-sexual purposes – as is the case in body packing of illicit drugs[22] – and voluntarily or not. Numerous types of objects have been described in the literature (ranging from fruits and vegetables,[18–20] cosmetic containers,[4,5,14,15,18,23] cans or bottles,[12,15] batteries,[18] light bulbs[13,15] and children[9,17] or sex toys[5,15,18]) and all of them should be regarded as potentially hazardous of causing significant injury.

More often than not, patients who present to the emergency department with RFB have attempted to remove the object unsuccessfully prior to seeking medical care.[3] Pelvic or even abdominal pain, if perforation has occurred above the peritoneal reflection,

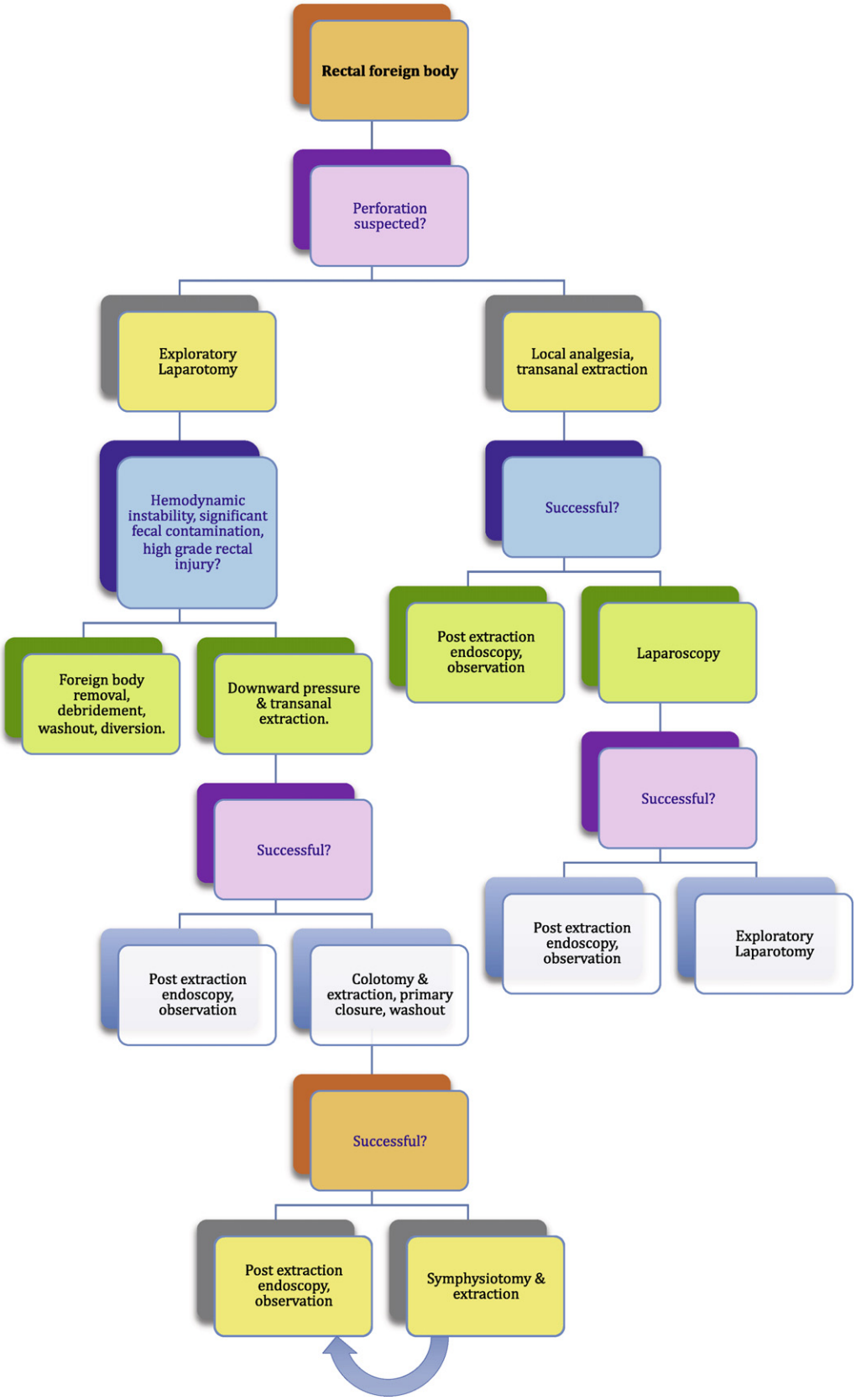

Fig. 3. Suggested work-up and management algorithm for patients with rectal foreign bodies.

bleeding per rectum, rectal mucous drainage, even incontinence or bowel obstruction can be the presenting symptoms. One should always bear in mind that individuals with FRB may be reluctant to reveal the true reason for their ER visit and may have delayed presentation for many hours, even days, in hope of spontaneous foreign body passage. It is important to maintain a high degree of suspicion should someone present with the aforementioned symptomatology.

Physical examination is centered around ruling out peritonitis. A rectal examination should be performed, to assess the distance of the RFB from the anal verge and to determine sphincter competency. It is uncommon for the sphincter to have been injured in cases of voluntary insertion. Routine laboratories are recommended to assess the extent of physiologic derangement from the presence of the RFB. An abdominal series would define the nature, size and shape of the foreign body, its location, and rule out subdiaphragmatic free air. Computed tomography of the abdomen and pelvis may be considered if the RFB has been in place for more than 24 h.

Once work up is complete, rigid proctoscopy should be undertaken – especially for foreign bodies high up in the rectum, when digital examination is insufficient – to assess the degree of rectal mucosal injury, visibility of the foreign body and its distance from the anal verge. Care should be taken to prevent further pushing the rectal body higher up in the rectosigmoid.

3.1. Transanal approach

After complete assessment, an attempt at manual extraction transanally should be made. This is successful in the majority of cases. Pudendal nerve block,[1,18,20] spinal anesthetic[1,2,8,10,13,14,17,18] and/or intravenous conscious sedation[4,5] can be utilized as needed to help the patient relax, decrease anal sphincter spasm and improve visualization and exposure, and thus improve chances of successful retrieval.[24] The anal canal should be dilated gently, and if the foreign body is palpable, it may be grasped and extracted manually, following the rectosigmoid axis. If the foreign body is higher up, the anal canal should be gently dilated with a speculum and the rectum insufflated.[14,17] A long Kocher clamp or ringed forceps can be used for extraction.[15,25] Having the patient perform a Valsalva maneuver during the attempt may facilitate the process.[20] In case of fragile items, such as light bulbs and bottles, attention should be paid at excessive manipulation so they do not break inside the rectum creating further injury.

Sliding a Foley catheter past the foreign object and inflating the balloon above it may help pull the RFB toward the anal canal,[16,19] however, this may not always be feasible if the item is tightly wedged. Delivery forceps and obstetric vacuum extractors[9,15,19] have also been described, but their use should be limited to those with experience in manipulating them.

3.2. Endoscopic methods

Endoscopy is mainly helpful in cases where the foreign body is located high in the rectum or even in colon. Endoscopic snares[12] and gentle insufflation in the bowel[14] to help loosen the seal around the RFB have both been described. Lake et al.[3] determined that when the RFB was in the sigmoid approximately 55% of cases eventually required celiotomy for removal, as opposed to only 24% in cases of rectal objects.

3.3. Transabdominal exploration

If transanal and endoscopic approaches fail to retrieve the foreign object or there are peritoneal signs the patient needs to be taken for surgery. Predictors of surgical intervention, as described by Lake et al.[3] and Yaman and their colleagues respectively include foreign bodies which are larger than 10 cm, hard or sharp, or located in the proximal rectum or distal sigmoid. With general anesthesia trans-anal retrieval should be reattempted and might be successful, as the anal sphincter is completely relaxed. Some authors have recommended a laparoscopic attempt first to push the RFB distally to allow for transanal removal, specifically if the objects have migrated proximally and need to be advanced back down into the rectum with gentle transperitoneal pressure.[4,21] Goldberg and Steele[1] suggest that downward pressure on the object in the left iliac fossa can greatly aid moving the object toward the rectum and stabilize it when attempting to grab and extract it transanally.

Laparotomy is the last option. A lower midline incision is ideal. The first step is to assess the sigmoid distally to rule out transmural injury. An attempt to gently push the foreign body into the rectum for transanal retrieval should be made. If the RFB is successfully extracted, the distal colon should be assessed again for injuries using proctoscopy. Those with lacerations of the colon that involve less than one third to half the circumference and are fresh and not accompanied with gross peritoneal contamination can be repaired primarily. If the orientation and shape of the object are unfavorable, a colotomy can be made and the item can be extracted through the peritoneal cavity. The colotomy can be repaired primarily and tested for leak using proctoscopy.

With higher circumference injuries a Hartmann's procedure may be needed. Diversion should also be considered in patients with delayed presentation, significant fecal contamination, signs of sepsis and hemodynamic instability. It is of paramount importance to inspect the distal colon endoscopically to rule out inadvertent injuries upon successful extraction.

3.4. Symphysiotomy

If none of the above measures are successful, specifically in cases of large objects tightly wedged in the pelvis, symphysiotomy can be undertaken. This method of extraction has not been described before in the surgical literature to the best of our knowledge, but it represents the logical next step in attempting to expand the pelvic volume and facilitate foreign object extraction.[26] Internal fixation can be done in the absence of local contamination that would jeopardize the sterility of the implanted hardware.

A schematic representation of the above suggested algorithm at approaching foreign rectal bodies is illustrated in Fig. 3.

3.5. Post-removal management

Abdominal X-ray imaging and endoscopic surveillance of the colonic mucosa immediately after RFB removal is mandated to rule out inadvertent extraction-related injury and perforation.[1,3] Even if transanal extraction was performed without difficulty, close observation for many hours with serial abdominal examinations is recommended.[1,6] If celiotomy was undertaken, endoscopy should ideally be performed prior to closure.

Continuing resuscitation and observation, postoperative pain control, early ambulation and diet initiation upon return of bowel function should follow guidelines of any general surgical intervention. Extrapolating from the trauma literature, antibiotics should not be continued past 24 h, in early presenters with no evidence of abdominal sepsis. In cases of sexual assault, long-term psychological consequences may occur, and early involvement of a mental health provider is warranted.[1] Discharge should be considered when bowel physiology returns. If there is evidence of sphincteric injury, attempt at surgical correction should be delayed.

4. Conclusion

Management of patients with rectal foreign bodies can be challenging. A systematic approach is proposed to avoid pitfalls. Even though the majority of cases can be successfully managed conservatively, the occasional trip to the operating room may be warranted for laparoscopy- or celiotomy-assisted removal. In large, tightly wedged objects that cannot be removed even with an open abdomen, pubic symphysiotomy should be considered.

Conflict of interest

The authors have no conflicts of interest to declare.

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None.

Ethical approval

Written consent has been obtained from the patient for the information to be included in our manuscript. His information has been de-identified to the best of our ability to protect his privacy.

Authors' contribution

Background research performed and first manuscript drafted by Laurian Roediger. Critical manuscript revision and literature assessment performed by George Kasotakis. Overall manuscript review and guidance by Sumeet Mittal.

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